SUSTAINABLE DEVELOPMENT AND POPULATION DYNAMICS IN NIGERIA

¹Eyenema Ndifreke Umoudo - ueyenema@yahoo.com
²Thomas Dima Sunday – dima.Sunday@yahoo.com
³Innocent John Enang – enanginnocent@gmail.com
^{1.2&3}Department of Business Administration and Management
Akwa Ibom State Polytechnic – Ikot Osurua

ABSTRACT

This paper examined the relationship between population dynamics and sustainable development in Nigeria. Sustainable development has become the buzzword in development treaties. As population continues to grow at an alarming rate most especially in sub-Saharan Africa with Nigeria leading, agricultural production has been estimated to decline in the coming decades. Relying on data from secondary sources, the study x-rayed the Malthusian theory, the Cornucopian, Simon and Boserup theories, the demographic theory and Solow growth model in an attempt to establish the relationship between sustainable development and population dynamics in Nigeria. The study revealed that population growth rate, age structure and spatial distribution affects sustainable economic development in Nigeria. It is recommended that policy makers should adopt a cross-sectoral and multi-dimensional approach to addressing the challenges of population, environmental change and sustainable development; there is urgent need for proactive planning for population dynamics with the systematic use of available population data and projections by the Nigerian government. This also entails development of the technical capacity of technocrats and bureaucrats on programme design, research, implementation and application of research evidence in decision-making processes for sustainable development.

KEYWORDS: Sustainable Development, Population, Population Dynamics, Policy makers.

Introduction

The world as a whole is experiencing a rapid demographic change (Bongaarts, 2009), especially in the human population. Population change by size and growth has continued to be one of the most important factors affecting sustainable development in Nigeria, given the current dilemma of the nation's economy which is deteriorating almost on a daily basis (Jack & Uzobo, 2017). Also, the Department of Economic and Social Affairs of the United Nations (2015) reported that the world's population reached 7.3 billion as of mid-2015, implying that the world has added approximately one billion people in the span of the last twelve years. Sixty per cent of the global population lives in Asia (4.4 billion), 16 per cent in Africa (1.2 billion), 10 per cent in Europe (738 million), 9 per cent in Latin America and the Caribbean (634 million), and the remaining 5 per cent in Northern America (358 million) and Oceania (39 million). For now, the world's population is projected to increase by more than one billion people within the next 15 years, reaching 8.5 billion in 2030, and to increase further to 9.7 billion in 2050 and 11.2 billion by 2100 (Department of Economic and Social Affairs of the United Nations, 2015). However, the pace of global growth has slowed considerably

| INTERNATIONAL JO MANAGEMENT STU | VOL.12. ISSUE 1. | |
|------------------------------------|--------------------------------------|----------------------|
| A Peer Reviewed (Refere | (DECEMBER, 2023) | |
| Impact Factor 4.308 | http://www.ijbems.org ISSN:2941-9638 | (2202,1122,13, 2020) |

since around 1970, and the world's population is expected to stabilize by the end of the century (Wilmoth, Menozzi, & Bassarsky, 2022). The problem of population, according to United Nations Population Information Network (POPIN), is not simply a problem of numbers; it is a problem of human welfare and development (POPIN, 2013).



Figure 1: Global population size and annual growth rate: estimates, 1950-2020, and projections with prediction intervals, 2020-2100. Source: United Nations (2019).

Note: Prediction intervals (shaded area around a projected trend) were derived from a probabilistic assessment of projection uncertainty. For a given year, the future trend is expected to lie within the predicted range with a probability of 95 per cent.

The 2030 Agenda for Sustainable Development adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries – developed and developing – in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. Sustainable development has become a ubiquitous development paradigm which catchphrase for international aid agencies, the jargon of development planners, the theme of conferences and academic papers, as well as the slogan of development and environmental activists (Ukaga, Maser & Reichenbach, 2011).

Statement of the Problem

The relationship between sustainable development and population dynamics is not clear-cut and relies largely on empirical evidence (Furuoka, 2009). Various studies on how population affects development in developing countries have found mixed results (World Bank, 2000; Sinding, 2009). That is, it is unclear whether population dynamics in growth, age structure, and rural-urban disparities contribute positively, negatively or have no significant impact on sustainable development. The currently available empirical literature on the effects of population phenomenon sustainable development in Nigeria is scanty. Closely related studies by Mlia and Kalipeni (1987) as well as by House and Zimalirana (1992) focused on implications of rapid population growth on natural resources and social amenities. The ultimate finding was that the increasing pressure from population depleted resources and exacerbated poverty.

INTERNATIONAL JOURNAL OF BUSINESS EDUCATION AND MANAGEMENT STUDIES (IJBEMS) *A Peer Reviewed (Refereed) International Journal* Impact Factor 4.308 <u>http://www.ijbems.org</u> ISSN:2941-9638

Nigeria has one of the fastest growing populations in the world with an estimated growth rate at about 3.2%. At this rate, it is projected that the population will double in size in just 24 years (NPC, 2009). Nigeria has experienced a general decline in the four mortality indicators: infant, child and under-five mortality rates, and maternal mortality rates. The NDHS shows that infant mortality rates dropped from the 100 per 1,000 live births in 2003 to 69 per 1,000 live births in 2013; child mortality rates dropped from 112 per 1,000 live-births in 2003 to 88 per 1000 live-births in 2008 and to 64 per 1000 live births in 2013. Under-five mortality rate dropped from 201 per 1000 live births in 2003 to 128 per 1000 live births in 2013 (NPC and ICF International, 2013). Maternal mortality estimates varied among different sources.

Life expectancy at birth is one of the most important demographic indicators. It shows the number of years a new born infant would live assuming that birth and death rates will remain at the same level during the whole lifetime. Total life expectancy (both sexes) at birth for Nigeria is 47.6 years. This is below the average life expectancy at birth of the global population which is about 71 years (according to Population Division of the Department of Economic and Social Affairs of the United Nations, 2013). Male life expectancy at birth is 46.8 years. Female life expectancy at birth is 48.4 years.

Conceptual Framework

Population Dynamics

The concept of population dynamics refers to changes in the size, demographic structure and spatial distribution of a given population over time. Such changes can be traced to natural environmental changes, changes in economic and political circumstances, changes in reproductive health management technology and, ultimately changes in human reproductive and location decisions (UNDESA/UNDFPA, 2013; ACF/IRIS, 2016).

Sustainable Development

The concept of sustainable development is long known and recognized as important. The most famous definition of sustainable development is given in the 1987 Brundtland Report: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Sustainable development encompasses various aspects of human life, explicitly laid out in the key objectives of the renewed EU Sustainable Development Strategy (European Council, 2006): environmental protection, social equity and cohesion, economic prosperity, and meeting our international responsibilities. These four objectives are also reflected in the United Nations Millennium Development Goals (MDGs). Using this description alone, we are able to grasp the concept behind sustainable development: it is multi-dimensional in multiple dimensions.

Empirical Literature Review

Population Dynamics and Sustainable Development

Studies have found out that Population sizes and distributions will continue to influence development challenges especially in the developing countries. Population dynamics could potentially affect the availability of natural resources such as agricultural land and water. In this section we shall be looking at some of the implications of population dynamics with special focus on population growth on sustainable development. Population growth firstly has an impact on food security. As population continue to grow at an alarming rate most especially in sub-Saharan Africa with Nigeria leading, agricultural production has been

INTERNATIONAL JOURNAL OF BUSINESS EDUCATION AND MANAGEMENT STUDIES (IJBEMS) A Peer Reviewed (Refereed) International Journal

Impact Factor 4.308

http://www.ijbems.org

estimated to decline in the coming decades (Population Action International – PAI and the African Institute for Development Policy-AFIDEP, 2012). Population growth will put pressure on crop land. It has been predicted that Sub-Saharan Africa will be one of the regions to be most severely affected by drought and temperature increases as a result of population growth. PAI and AFIDEP (2012), has stated that food crises, such as those that have occurred in the horn of Africa, will become more common. They also added that even in the short-term, every country on the continent, except Zambia, is projected to experience a decline in agricultural production. In essence, the challenge of population growth is likely to compound food insecurity.

ISSN:2941-9638

Secondly, it has been predicted that Population growth will have a negative impact on water resources. Developing countries of Africa and Asia are projected to be severely impacted by water scarcity, which will be exacerbated by environmental change effects. It was estimated that about 400 million people in 15 countries in sub-Saharan Africa are currently suffering from water scarcity. This number is projected to double to over 800 million by 2050 as more countries join in the problem of water scarcity. Djibouti, Cape Verde, Kenya and Burkina Faso have been discovered to be the most severely affected by water scarcity (PAI and AFIDEP 2012). Studies have further found out that countries with acute water scarcity all have high population growth rates. With growth rate of Sub-Saharan Africa, water scarcity in these countries has been predicted to even be more acute (PAI and AFIDEP 2012).

A study by Stamnova and Gveroski (2016) on the role of spatial distribution on economic development in Macedonia showed that rural areas have high importance in the development of agrarian economies. Compared to urban areas, findings indicate that rural areas significantly contribute to the reduction of unemployment and poverty. This is achieved by employing most of the working population in production, trade and other areas of economic gain. With many natural opportunities for primary agricultural production, countries where agriculture is predominant require special emphasis on the development of rural areas to foster faster economic development. Bloom and Freeman (1986) made an analysis focusing on the impact of population growth on labour supply and employment in developing countries. They argue that fertility, mortality and migration affect labour supply differently with mortality and migration having immediate effects and fertility having delayed effects. These factors culminate in a varying age distribution. This is manifested by various agespecific growth rates of a population by which the age structure of the population changes through time. They noted that population growth that is due to high birth and death rates is inconsequential to economic growth and development whereas population growth which is due to low birth and death rates is associated with a higher growth of national income.

In essence, the latter population dynamics allow the working age group to grow faster relative to the dependent population which drives more saving and investment. In essence, their conclusion was that timing and components of population growth were revealed as important in the development process. Others have found mixed results (World Bank, 2000; Sinding, 2009). In essence, this leans to the direction that there is no clear prescription on how population trends and dynamics affect development outcomes. Such conclusions for particular economies can only be established through empirical evidence.

Theoretical Literature Review

This section advances two main schools of thought relating population to economic development. The first is the pessimistic school which regards population to have adverse impacts on development. This is championed by the Malthusian model. The other school of

| INTERNATIONAL JO MANAGEMENT STU | VOL.12. ISSU | JE 1. | | | |
|--|-----------------------|----------------|--|------------|------|
| A Peer Reviewed (Refereed) International Journal | | | | (DECEMBER. | 2023 |
| Impact Factor 4.308 | http://www.ijbems.org | ISSN:2941-9638 | | (2-0-11) | |

thought criticizes Malthus by providing alternatives which suggest that population can generate positive consequences on development. Models in this school include the Cornucopian model, the Boserup model, the Demographic Dividend and Simon's theory.

Malthusian Model

The Malthusian model of population was propounded by Thomas Robert Malthus in his essay on population growth and food supply (Malthus, 1798). The theory postulates that population increases geometrically while food supply increases arithmetically implying that population growth eventually outpaces the supply of food for the population. Malthus (1798) made propositions that population needed two major kinds of checks to avoid overpopulation. Preventive Checks entailed individuals' voluntary use of methods to limit population growth while 'positive checks' entailed methods of controlling population growth which are resultant of the lack of utilization of the Preventive checks to repress increases which already begun. In his prediction, without preventive action, scarce resources would be increasingly shared among a growing number of people then inevitably, factors such as famine and diseases would eventually level the population with the productive capacity of the population (Malthus, 1798). This limitation to growth has been commonly referred to as "the Malthusian population trap" depicted in Figure 2.



Source: Todaro and Smith (2012)

The vertical distance between income and population growth is the growth rate of per capita income. That is, whenever income growth supersedes population growth, per capita income increases causing a rightward movement along the x-axis. At a low level of growth of income, the population faces poor livelihoods such as infectious diseases as well as poor health service (Todaro & Smith, 2012). Starvation becomes inevitable. This describes the conditions as depicted to the left of the subsistence point S. Income levels beyond that point signify periods of improved health and nutrition which cause the population to grow. As population growth exceeds income growth, per capita income falls and thus moves leftwards towards point S. Point S is thus technically a stable equilibrium. Point T is an attainable threshold ideally for rich economies after which population growth is less than income growth and per capita income grows perpetually at a steady rate.

Cornucopian, Simon and Boserup Theories

Unlike the sentiments made by Malthus, Cornucopians advance a contemporary view on population growth. In their view, increases in population have positive effects to the

development of the economy (Jackson, 1995). Increase in population leads to an increase in a pool of human capital capable of producing ideas to curtail challenges associated with population growth for the sustenance of the population and improvement of living standards

These ideas in turn generate various modern technologies which enable specialization of labour and more effective and efficient production systems (Jackson, 1995). The negative consequences of population growth can thus be averted through the utilization of the various technologies. With Technical Progress, a country is able to generate a level of income that is greater than the growth rate of population at all levels of per capita income through changes in economic and social institutions. The economy is thus able to produce self-sustaining growth.

Julian Simon's theory also issues a criticism to Malthusian perspectives of "limits to growth" (Aligica, 2009). He put forward an alternative in the pro-growth paradigm. Contrary to diminishing returns as implied by Malthus' model, Simon's theory suggests that detrimental effects of population growth are only transitory but economic gains are achieved in the long run (Simon, 1977). Similar to the Cornucopian perspective, a moderately growing population can take advantage of Technological Progress resulting in economies of scale in which much productivity can be realized and food production can surpass population growth itself (Simon, 1992).

Demographic dividend

The concept of the demographic dividend was coined by demographic economists to imply a prospective economic benefit of a youthful population increasing in the share of working age adults to child dependents due to a decline in birth and death rates (Fang, 2010). This is intuitive in the sense that for a substantial period, the economy benefits from a huge chunk of the labour force with a minimal drag in resources with fewer dependents. There is thus a need for policy intervention to facilitate rapid declines in fertility as well as create favourable conditions to combat mortality so that it declines as well.

According to Lee and Mason (2006), with fewer dependents, the working aged population also has a larger propensity to save and accumulate assets which can also in turn boost portfolio investment on the capital market. The efficacy of the demographic dividend can be augmented with increased investment in education and job creation to make the most of the working class (Fang, 2009). In this light, harnessing the demographic dividend can boost economic growth and development. In the dawn of the new millennium, the concept of the demographic dividend proceeds to assume a major role in development planning in various countries with youthful populations like Nigeria. With over 60 percent of Africa's population aged 24 and below, the prospects of forthcoming economic development emanating from the youth are very high (African Union, 2017). This was widely recognized by the 2007 African Population Commission, 2012 State of Africa Population Report, 2013 Africa regional conference on population and development, 2014 Executive council report as well as the 2017 Africa Cup of Nations which all called for investments in the youth in order for African nations to harness the demographic dividend (African Union, 2017).

This study will delve into the age distribution of Nigeria's population as a crucial element of Nigeria's population dynamics to decipher its short and long-run linkages to economic development.

Solow Growth Model

This is a Neoclassical theory of economic growth propounded by works of both Robert Solow and Trevor Swan in 1956 (Acemoglu, 2008). The model employs Capital and Labour as factors of production. Both factors experience diminishing returns in production but constant returns to scale. Economic growth in the long term is generated by an exogenously determined technological change while the labour force growth and depreciation only account for the level of economic output in the long term. Their collective effects are thus only transitory.

Figure 3 illustrates the mechanics of the Solow growth model.



Source: Acemoglu (2008)

The economy's total per capita output at time t is represented by ((t)) where s ((t)) is the fraction that is saved for investment while the rest is used for consumption. The labour force grows at a rate of n per year which is in this case the rate of growth of population while the capital stock depreciates exponentially at a rate equal to δ . The total stock of capital increases when savings which are equal to Actual Investment [s(f(k(t)))] are greater than the investment requirement to service for depreciation and new workers joining the labour force [$(\delta + n) k(t)$]. Conversely, when this actual investment falls short of the investment requirement to replenish capital, the stock of capital falls.

The dynamics are given as: $\Delta k = (k(t)) - (\delta + n)k(t)$ (3.1)

When actual investment equals the investment requirement, the economy reaches a long-run condition known as the steady state signified by the level of capital per worker k. This is a stable equilibrium towards which levels of capital beyond and below eventually converge. In this model, only the change in the growth rate of technical progress affects the growth of capital per worker in steady state. The effect of population growth is that it raises the investment requirement and thus steers the economy to converge to a lower level of steady state capital per worker.

The Solow model has high relevance to the study's analysis. Whereas the rate of growth of population captures labour force growth, the analysis modifies the model prescription to include dynamics of age structure and spatial distribution.

Research Methodology

This chapter discusses the measures of economic development and those of population dynamics. Then, the modelling and econometric specification is provided followed by a description of the variables used in the study as well as their expected direction of effect. The source of the data is also stated along with the design the study will take. The chapter concludes by laying out various tests crucial in establishing evidence as intended by the study.

Measures of Population Dynamics and Economic Development

While economic development is a broad concept, the study selects reasonable measures. These include per capita GDP, the Inequality-adjusted Human Development Index and the Net Per capita Food Production Index. Per capita GDP is here in applied to capture economic growth while the Inequality adjusted Human Development Index captures socioeconomic development and the Net Per capita Food Production Index captures the economy's capacity of producing food. Intuitively, a developing economy should achieve higher levels of economic growth, food production and socioeconomic development. Population dynamics which emanate from Fertility, Mortality and Migration are measured by population size, growth, and share of young people in the total population, share of working-age people in the total population, share of rural residents, and share of urban residents. Population size and growth will capture the possibility of economies of scale of population, the respective shares of population in terms of age will capture the spatial distribution.

Measures of sustainable development

There port by the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz et al., 2009) and the OECD "Better Life Initiative" (Ibid, 2011) has shifted the attention of policy makers and researchers back to the shortcomings of measuring a country's development solely on the basis of GDP or GDP per capita. In their recommendations Stiglitz et al. clearly point out that this production-based measure is not adequate for measuring society's well-being. Their first recommendation is to"... look at income and consumption rather than production, (...) when evaluating material well-being..." (p.12). Further, social development as well as environmental conditions should be considered as these also have strong impacts on living conditions now and in the future. Both social and environmental factors, though, are often hard to capture in one indicator. Possible indicators such as school enrolment rates or CO2 emissions are available for long time periods for at least the developed countries. What these indicators do not measure is the quality of education or the impact of CO2 on the environment. Nevertheless, according to Stiglitz et al. (2009) these should be measured. In this context the notion of sustainable development has gained importance in the past decade.

First, from the Brundtland Report, we have the reference to the presence and the future. That means that we are not only looking at one point in time, but also consider future consequences of our actions today. Sustainable development is an inter-temporal issue.

Second, from the EU Sustainable Development Strategy (EU SDS) we learn that we may not only concentrate a single subject, i.e. the economy or economic growth, but also take into account other aspects of development: the environment and also social issues. These three aspects of development are often referred to as the three pillars of sustainable development: the economic, the social, and the environmental pillar.

The last key objective of the EU SDS and MDG 8, reflect the third and last multidimensional dimension of sustainable development. It does not concern one person, one group of people, one city, or one country only. Development has to be sustainable globally.

Theoretical Framework

The study adopted the Solow-swan model. The model is derived as follows:

$$Yt = Kta(AtLt)1 - \alpha$$
, $0 < \alpha < 1$

Yt is the GDP or Output; Kt is the capital used in production and AtLt is effective labour as the labour used is augmented by an exogenously determined level of technical progress A. The parameter α is the elasticity of output with respect to capital for which the inputs capital and labour jointly produce constant returns to scale.

(3.1)

Initial levels of *Yt*, *Kt*, *A*, *nd Lt* are taken as given. Their respective changes overtime are given by the derivatives with respect to time given as:

Yt = dYtdt, Kt = dKt dt, At = dAt dt, Lt = dLt dt.

Growth rates in the labour force given as population growth rate, as well as technical progress, are given as LtLt=n and AtAt=g respectively.

Capital accumulation is given as $Kt = sYt - \delta Kt$, where s is the fraction of output that is saved and δ is the rate of depreciation of capital. This implies that its corresponding growth rate is given as $KtKt = sYtKt - \delta$

Putting Equation (3.1) in growth terms, we obtain:

 $Yt \quad t = AtAt + \alpha KtKt + (1-\alpha) Lt \quad t \Longrightarrow Yt \quad t = g + \alpha Kt \quad t + (1-\alpha).$

In steady state, Yt t = KtKt

 \Rightarrow *YtYt*=*g*1- α + *n*.

The steady state growth rate in output per worker is given by the growth rate in *YtLt* which may be given as $YtYt-LtLt=g1-\alpha$. This indicates the steady state rate of growth of output per worker only depends on the rate of growth of technical progress. The effects of population growth rates, saving rates and depreciation rates on output are thus transitory.

The long run level of output per worker is more generally given as:

 $(YtLt) = At1 (1-\alpha) (sg1-\alpha+n+\delta)1-\alpha (3.2)$

Relating the model to the study, output growth is a function of population growth. The study adopts this relation with modification to include other pertinent population dynamics of age structure and spatial distribution.

Conclusion and Recommendations

Over the years, Nigeria has been facing many social, physical and economic problems due to the rapid population growth caused by high fertility levels, and these have been posing threats to sustainable development. With an estimated population of over 190 million people

| INTERNATIONAL JO MANAGEMENT STU | VOL.12. ISSUE 1. | | | |
|------------------------------------|-----------------------|----------------|--|---|
| A Peer Reviewed (Refere | (DECEMBER. | 2023) | | |
| Impact Factor 4.308 | http://www.ijbems.org | ISSN:2941-9638 | | , |

in 2017 and a population growth rate of 2.6 per cent per annum, Nigeria is Africa's most populous nation and the seventh most populous country in the world (UN, 2017).

The Nigeria demographic structure reflects that of a growing youthful population with a broad-based population pyramid. Based on the 2006 National Population census, about 42% of the people were aged less than 14 years, 29% were aged 15-19 years and 24% were in the prime age 30-59 years (NPC, 2009; UN, 2013). The population of the aged was also estimated at 4.8% in 2006 and 5.1% in 2015, while the median age of the population was estimated at 17.9 years (17.3 for males and 18.4 for females). The literacy rate is estimated at 61% in 2008 (NPC and ICF Macro, 2009) and 78% in 2010 (NBS, 2010); with an estimated 58% primary school enrolment in 2008-2011 (UNICEF,2012). According to the 2006 Census, Nigeria's population of 140 million comprises 71,709,859 males and 68, 293, 683 females with a sex ratio of 105. The sex ratios across the age groups are as follows: at birth: 106; 0-14 years: 105; 15-24 years: 105; 25-54 years: 97; 55-64 years: 85; 65 years and over: 85 (CIA, 2013). Literacy rate is higher for male than female in Nigeria with an estimated rate of 84% for male compared with 74% for female (NBS, 2010).

Following the conclusion from the study the following recommendations were proffered: population dynamics, reproductive health, family planning, poverty reduction, environmental protection and sustainable environmental resource management should be incorporated into an overall sustainable development policy framework; the government and Policy makers should adopt a cross-sectoral and multi-dimensional approach to addressing the challenges of population, environmental change and sustainable development; there is urgent need for proactive planning for population dynamics with the systematic use of available population data and projections by the Nigerian government. This also entails development of the technical capacity of technocrats and bureaucrats on programme design, research, implementation and application of research evidence in decision-making processes for sustainable development.

REFERENCES

- ACF/IRIS [Action Contre la Faim/IRIS] (2016). Nigeria trend analysis: Challenges and opportunities of the demographic shift and its link to stunting. An outlook to 2030.Inter-agency regional analysts network/central and West Africa report, Action Contrela Faim/IRIS. 25pp. *www.actioncontrelafaim.org*.
- African Union (2017). AU roadmap on harnessing the Demographic Dividend through investments in youth. Ethiopia: African Union.
- Aligica, P. D. (2009). Julian Simon and the "limits to growth" Neo-Malthusianism. *The electronic journal of sustainable development*, 1(3), 73-84.
- Bloom, D. E., & Freeman, R. B. (1986). The effects of rapid population growth on labour supply and employment in developing countries. *Population and development review*, 23, 381-414.
- Bongaarts J. (2009). Human population growth and the demographic transition. *Phil. Trans. R. Soc. B* (2009) 364, 2985–2990.
- Bruntland Commission (1987). *Our Common Future*. Oxford University Press, Oxford. Centre for Economic and Environmental Development.
- Fang, C. (2009). Future Demographic dividend tapping the source of China's economic growth. *China Economist*.
- Fang, C. (2010). Demographic transition, demographic dividend and Lewis turning point in China. *China Economic Journal*, *3*(2), 1-22.
- Furuoka, F. (2009). Population growth and economic development: New empirical evidence from Thailand. *Economics Bulletin*, 29(1), 1-14.
- House, W., & Zimalirana, G. (1992). Rapid population growth and its implication for Malawi. *Malawi Medical Journal*, 8(2), 46-54.
- Jack, J. & Uzobo, E. (2017). Population Dynamics, Environmental Changes and Sustainable Development in Nigeria: Implication for Policy Makers. Uyo Journal of Sustainable Development, 2(2), 227-242.
- Jackson, W. A. (1995). Population growth: A comparison of evolutionary views. *International Journal of social economics*, 22(6), 3-16.
- Lee, R., & Mason, A. (2006). What is the demographic dividend? *Finance and Development*, 43(3).
- Malthus, T. R. (1798). An essay on the principles of population. Cambridge: Cambridge University Press.
- National Population Commission (NPC) [Nigeria] and ICF Macro (2013). *Nigeria Demographic and Health Survey 2013: Preliminary findings*. Abuja, Nigeria: National Population Commission and ICF Macro.

- Population Action International and the African Institute for Development Policy (2012).Population, Climate Change, and Sustainable Development in Africa. *PAI and AFIDEP Policy brief.*
- Simon, J. L. (1977). *The economics of population growth*`. Princeton, New Jersey: Princeton University Press.
- Simon, J. L. (1992). *Population and Developing countries*. Princeton, New Jersey: Princeton University Press.
- Sinding, S. W. (2009). Population, Poverty and Economic Development. *Philosophical transactions of the Royal Society*, 3023-3030.
- Stamnova, A., & Gveroski, M. (2016). The role of rural areas in the economic development of Macedonia. *International Scientific Conference*, (pp.269-279). Belgrade.
- Stiglitz J. E. (2002). Globalization and Its Discontents. W.W. Norton: New York, NY.
- Todaro, M. P., & Smith, S. C. (2012). *Economic Development*. United States of America: Pearson.
- Ukaga, U., Maser, C., & Reichenbach, M. (2011). Sustainable development: principles, frameworks, and case studies. *International Journal of Sustainability in Higher Education*, 12(2) doi:10.1108/ ijshe.2011.24912bae.005.
- UNDESA/UNFPA (2013). Food security and population growth: Are they connected? Population Division of the Department of Economic and Social Affairs of the United Nations. *World Population prospects: The 2012 Revision, NY. P. 20.*
- UNICEF (2012): Nigeria Statistics at a Glance. Accessed online on 24/2/2014 at <u>http://www.unicef.org/infobycountry/nigeria_statistics.html</u>.
- Wilmoth, J., Menozzi, C., & Bassarsky, L. (2022). Why population growth matters for sustainable development. United Nations Department of Economic and Social Affairs (UNDESA) Policy Brief No. 130.
- World Bank (2000). *Entering the 21st century World development report 1999/2000*. New York: Oxford University Press.